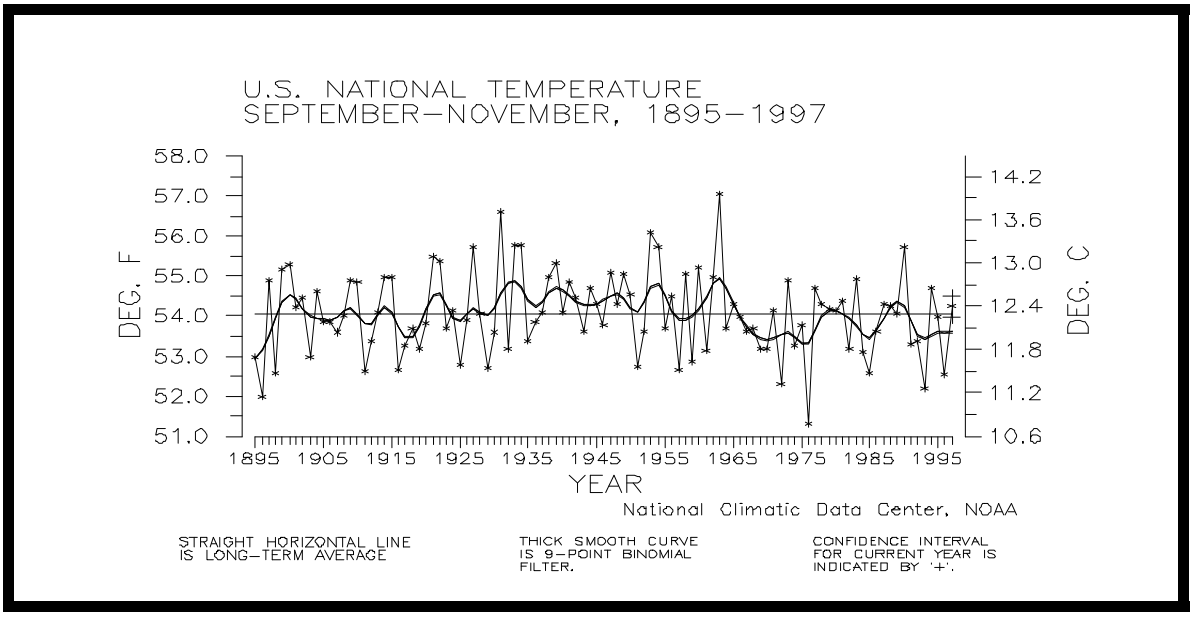
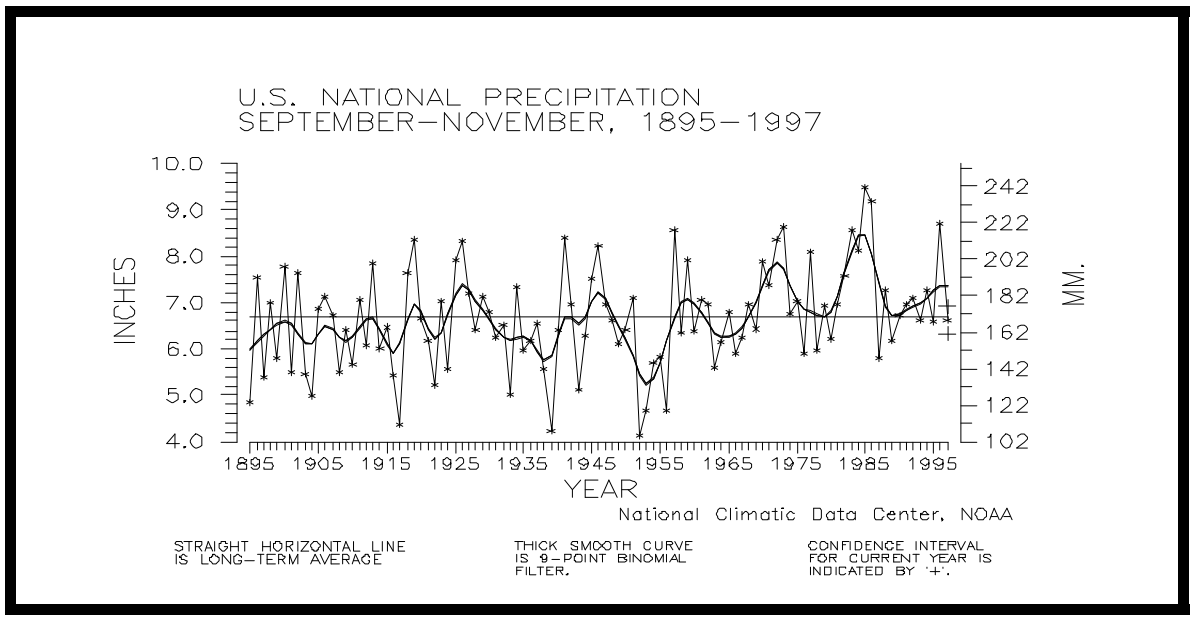
Monthly Activity Report

November 1997





Preliminary data for Autumn 1997 indicate that temperature averaged across the contiguous United States was above the long-term mean ranking as the 42nd warmest such season since 1895 (Top Figure). Nearly five percent of the country was much warmer than normal while about one percent of the country was much cooler than normal.

Preliminary data indicate that Autumn 1997 was the 51st driest such season since 1895 (Bottom Figure). Over four percent of the country was much drier than normal while about five percent of the country was much wetter than normal.

DIRECTOR'S HIGHLIGHTS

U.S./PRC Joint Workshop on Natural Disaster Reduction

Dr. David Easterling of the National Climatic Data Center accompanied Under Secretary Baker to Beijing, China, November 17-22 to attend the U.S./PRC Joint Workshop on Natural Disaster Reduction. He presented a paper in the Meteorological and Oceanographic Disaster Breakout Group on observed variability and trends in extreme precipitation events in the United States and their relationship to El Niño Southern Oscillation (ENSO) and potential climate change. He was interviewed by the government television station on general ENSO effects on the U.S.

Senate Budget Committee Staff Briefing on Global Warming

Thomas Karl, the National Climatic Data Center's Senior Scientist, briefed the Senate Budget Committee on what we know about the Greenhouse Effect in terms of changes in observed weather and climate. About 40 staffers participated.

U.S. Climate Assessment Forum

Thomas Karl, the National Climatic Data Center's Senior Scientist, served as Rapporteur for the U.S. Climate Forum "The Consequences of Global Change for the Nation," sponsored by the U.S. Global Change Research Program (USGCRP) and the White House Office of Science and Technology Policy, in collaboration with the National Research Council.

Regional Climate Centers Move to National Climatic Data Center (NCDC)

Congress, in the FY98 National Oceanic and Atmospheric Administration (NOAA) appropriations bill, moved the Regional Climate Centers from the National Weather Service to National Environmental Satellite, Data, and Information Services (NESDIS)/NCDC. The six Centers, begun in the late 1980's, represent a more regional approach to meeting the needs of the climate community. Steve Doty will be the NCDC coordinator with the Centers.

Seminar on Global Warming and the Earth's Water Cycle

Thomas Karl, the National Climatic Data Center's Senior Scientist, presented an invited lecture entitled "Evidence for changes in the earth's water cycle as a result of greenhouse gas emissions: What do the changes mean and why be concerned?" at the Rayburn House Office Building sponsored by the U.S. Global Climate Research Program.

Mixed Reviews for Customer Service

November 1997 customer service operations evidenced the normal holiday month decline in National Climatic Data Center customer requests. Customer statistics for November 1997 showed a 10-25 percent decline from October 1997 figures in all categories with the exception of Next Generation Weather Radar (NEXRAD) Level III orders, which bucked the trend with a 24 percent increase over last month's totals. Despite the significant month to month decline, year to year comparisons between November 1997 and November 1996 yielded mixed results. Data sales during November 1997 reflected a 5 percent increase over November 1996. NEXRAD Level III orders for November 1997 showed a 38 percent increase over November 1996 totals. There was a 25 percent decline in customer orders and a 20 percent decline in customer requests.

Insurance Executives Briefing

Thomas Karl, National Climatic Data Center's Senior Scientist, presented an invited lecture to insurance executives entitled "The 1997-1998 El Niño: Possible impacts on the Property Insurance Industry as related to temperature and precipitation extremes." The briefing was sponsored by the National Oceanic and Atmospheric Administration and its Cooperative Institute at the University of Oklahoma.

NOAAServer Pilot Project

The National Oceanic and Atmospheric Administration (NOAA) Server Pilot project was initiated this past month. It is a system analysis effort, led by Dan Manns, to give National Environmental Satellite, Data, and Information Services (NESDIS) an understanding of what aspects of NOAAServer are missing, based on the requirements laid out in the NVDS Architecture Plan and other NVDS definition documents. Each NESDIS data center will provide specific datasets for a defined region on the Atlantic Coast. These datasets will be loaded onto each Center's local data server attached to NOAAServer and will be used for base-line testing in the future. The data will be accessed and downloaded via NOAAServer.

Mission Support Services Contract - New Solicitation

The upcoming release of the National Climatic Data Center Mission Support Services Contract was announced in the Commerce Business Daily. Several documents requiring Department of Commerce senior level approval signatures are currently under review.

CLIMATE DATA AND INFORMATION SERVICES

✦ Data Base Development

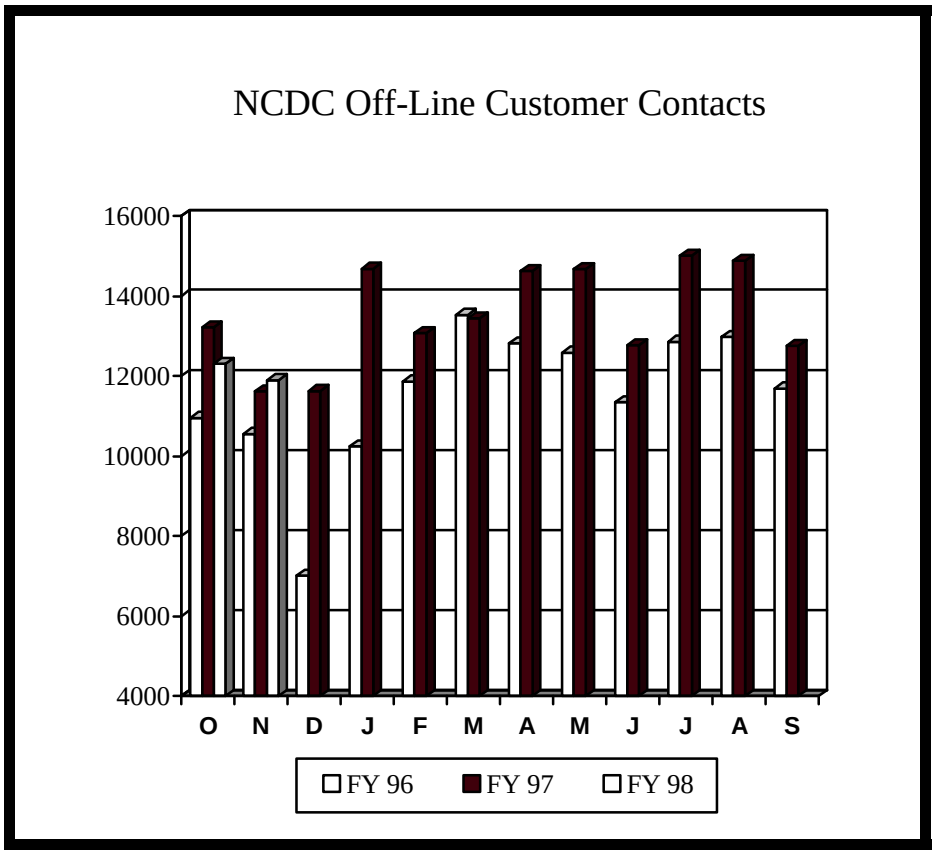
3590 Archive Project

In November, National Environmental Satellite, Data, and Information Service, Information Procurement Divison, performed an Initial Program Load of the Central Environmental Satellite Computer System (CEMSCS) production system to implement the Custom Built Installation Product Offering which provides IBM 3590 support to NCDC-Suitland. Although minor problems exist, CEMSCS has committed to supporting the upgrade while they continue to "work out the kinks." Shortly, NCDC-Suitland, will begin parallel testing of the new Archive system. The new software will write to 3590 media (1 tape every 2 ½ days) within the 3494 Tape Library Dataserver. The output media will be compared against the existing system output which is written on 3480 media at CEMSCS (approximately 50 tapes per day). NCDC will continue to retrieve 3480s daily from CEMSCS until the 3494 Tape Library Dataserver is fully operational.

GOES Rescue and Access Issues Workshop

On November 4-5, 1997, researchers convened at the National Climatic Data Center in Asheville, NC, to devise an implementation plan for the Geostationary Operational Environmental Satellite (GOES) data rescue and Scientific Access Opportunity. Among the attendees were Dr. Frances Bretherton, University of Wisconsin; Dr. Paul Menzel, National Oceanic and Atmospheric Administration (NOAA), Office of Research and

Applications (ORA); Dr. Dennis Chesters, National Aeronautics and Space Administration (NASA) GOES Project Scientist; Pat Minnis, NASA/ LARC.



Station History

A total of 18,742 station histories in the paper manuscript files have been recovered, consisting of 60,098 records. The period of record ranges from the present to pre-1800.

Reanalysis

Mike Crowe of the National Climatic Data Center (NCDC) has developed a clear policy for archiving and servicing of NCEP/NCAR Reanalysis Input Data and Model Output files. NCDC will concentrate initially on a system for user access to input data. Output files are available from both National Centers for Environmental Prediction (NCEP) and ERL/CDC.

UNISYS Software Migration Project (SMP)/Year 2000 (Y2K)

The assessment phase for both the SMP and Y2K projects have been completed. Unisys SMP and Y2K conversion work is already underway.

Update: Digital Data Rescue and Migration

(1) Archived back-up copies of 101,209 reels of National Oceanic and Atmospheric Administration (NOAA) Polar Orbiter Level 1B data since November 1991. The period of record of this data set is October 1991 through the present (operational).

(2) Archived 3,988 gigabytes of Next Generation Weather Radar (NEXRAD) Level II radar data on 267 exabyte tapes for the NEXRAD Project.

(3) Archived 74 gigabytes of radar data on 257 NEXRAD Level III disks.

(4) Archived library and back-up copies of NOAA Polar Orbiter Level 1B (TD-3601). The period of record of these data is November 1978 through March 1985. The total project rescue is 97.5 percent completed.

(5) Archived library and back-up copies of NOAA AVHRR, Scanning Radiometer, Defense Meteorological Satellite Program TD-3599. The total project rescue is 4.5 percent completed.

(6) Data Base Management Branch has loaded 12 data sets for a total of 111 gigabytes and 203,846 files into the Hierarchical Data Storage System.

Consolidation of Radiosonde Observations Completed

The National Climatic Data Center has com-pleted extraction and consolidation of radiosonde observations for approximately 230 global locations for 1991-1996. The sites are considered to have the best temporal and spatial coverage for studies of atmospheric temperature and moisture trends and are a combination of stations in networks recommended by various researchers plus those selected by the World Meteorological Organization for the Global Climate Observing System. These data will be processed through the Complex Quality Control v.2 software used for the same locations for the 1948-1990 period of record. Data will be appended to the Comprehensive Aerological Reference Data Set.

Mexican Monthly Station/Divisional Temperature/Precipitation Data Set

The National Climatic Data Center produced a Mexican monthly station and divisional temperature and precipitation data set. It contains 280 precipitation stations and 92 temperature stations. The general period of record is 1900-1988 for pre-cipitation and 1916-1987 for temperature. These data were placed on cd-rom and sent to Art Douglas (PI of the data set, Creighton University) and the Mexican regional meteorological offices that provided the original station data.

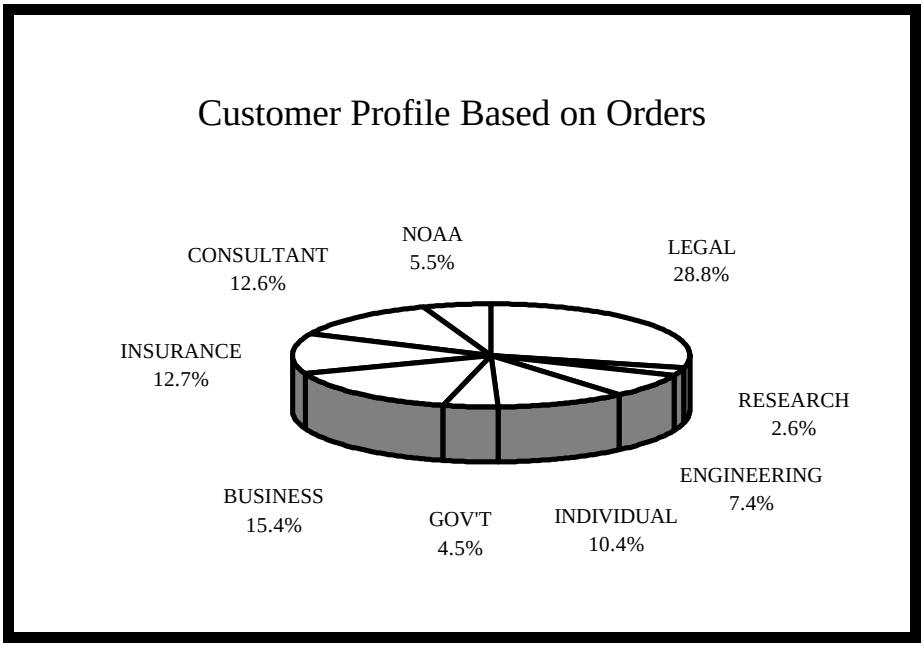
✦ Data and Information Distribution

Version 5 of Global Summary of Day Data Set Released

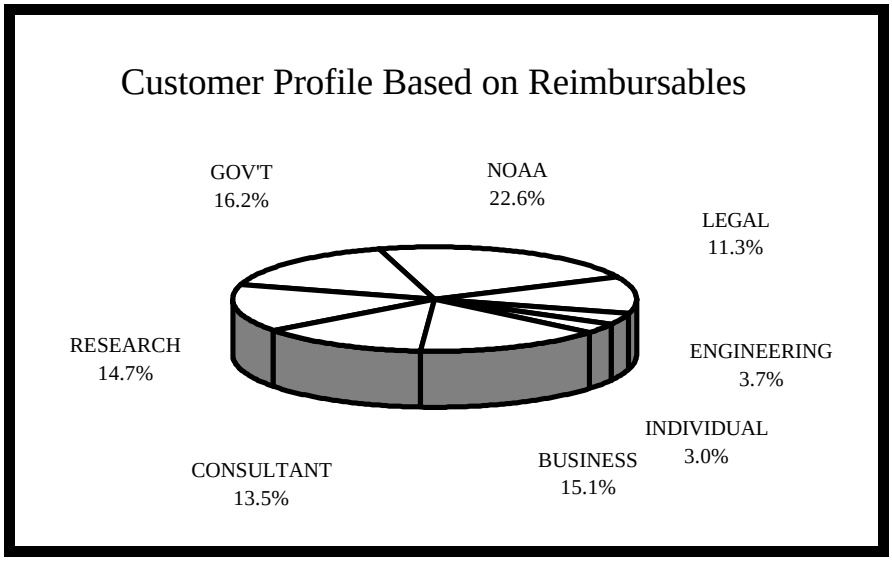
The National Climatic Data Center has released and placed on-line Version 5 of the global sum-mary of day dataset for 1994 to present. It includes 18 climatic elements available via two web systems; one providing global data files by month, the second providing interactive data selection by country and station (CLIMVIS). Over 8,000 global stations are available in the dataset; it's proven to be one of the more popular of those on-line. The latest version includes improvements in the precipitation and max/min temperature modules, better handling of new U.S. METAR data, and additional quality control.

Data Provided for Unified Climate Access Network (UCAN)

The National Climatic Data Center provided the full period of record from its surface hourly database for National Weather Service locations to the Southern Regional Climate Center. UCAN is



a consortium of federal and state agencies headed up by the U.S. Department of Agriculture (USDA) and the Regional Climate Centers. The goal of the project is to provide on-line access to climate data and information for USDA users for natural resource management.



October Snowstorm and Typhoon Events Added to NCDC's WWW Site

The National Climatic Data Center (NCDC) recently added several hot items to its WWW site. A page was developed for the recent Western Plains Snowstorm that dumped up to 32 inches of snow in the Denver area in October of 1997 and was responsible for 13 deaths. In addition, the Western Pacific was hit by "Super Typhoon Keith," which had a satellite-estimated central pressure of 872 mb with estimated sustained winds of 185 mph and gusts to 225 mph. Images of Keith are available in the "Images of Hurricanes and Other Storms" section of the NCDC home page.

ASOS Ice Detector Work Plan

The National Climatic Data Center (NCDC) provided input for the 1997-98 Automated Surface Observation System (ASOS) ice detector/glaze accretion work plan, prepared by the Cold Regions Research and Engineering Laboratory (CRREL). NCDC, CRREL, and the National Weather Service are involved in a cooperative effort to measure ice thickness and weight at six ASOS sites in the Eastern U.S. NCDC provides the ASOS data, which includes Rosemount ice sensor frequencies during freezing rain events. These frequencies are then correlated with manually measured ice thicknesses and weights to derive quantitative icing amounts.

NEXRAD Data Migration Prototype Delivered to National Climatic Data Center (NCDC)

A prototype system for migrating Next Generation Weather Radar (NEXRAD) Level II data from 8mm to 3590 tape has been designed by TMC Technologies, Fairmont, WV. The system was delivered to NCDC on November 4, 1997.

✦ Research Customer Service Group Requests

El Niño and Lake Effect Snowfall to Be Examined

A meteorologist at the Marquette, MI, National Weather Service Office obtained copies of the National Climatic Data Center *Cooperative Summary of the Day* CD-ROM for the entire period of record for Michigan. The researcher will use the monthly coop data to help resolve questions involving El Niño winter snowfall in the Upper Michigan lake effect snow belt area versus interior counties of the state. The general El Niño winter forecast for that region of the Great Lakes is for a warmer and drier pattern. However, the effect of the warmer temperatures may keep more of Lake Superior ice free this winter leading to an increase in lake effect snowfall. This local effect may offset

the general El Niño pattern and bring higher snowfall to parts of the area. The researcher is using the CD-ROM data to study historical snowfall data as part of that research and forecasting effort.

Lepidopterist Uses NCDC Cooperative Station Data for Research Project

Dr. Camille Parmesan from the National Center for Ecological Analysis and Synthesis at the University of California at Santa Barbara obtained temperature, precipitation, and snowfall data from mostly high alpine locations across parts of the western third of the U.S. The researcher is trying to correlate historical weather and climate information with butterfly populations and habitat.

✦ Satellite Data Requests

GOES 8 Data Supplied for Oklahoma/ Kansas Twisters

The National Weather Service office in Wichita, KS, contacted the National Climatic Data Center's Satellite Services Group to obtain satellite images of the May 26, 1997, tornado outbreak in Oklahoma and Kansas. This outbreak preceded the deadly Jarrell, TX, outbreak by one day and was caused by the same weather system.

✦ Requests from News Media

National Public Radio Interview

Thomas Karl, the National Climatic Data Center's Senior Scientist, participated in a National Public Radio interview on global warming in conjunction with the Kyoto Climate Conference.

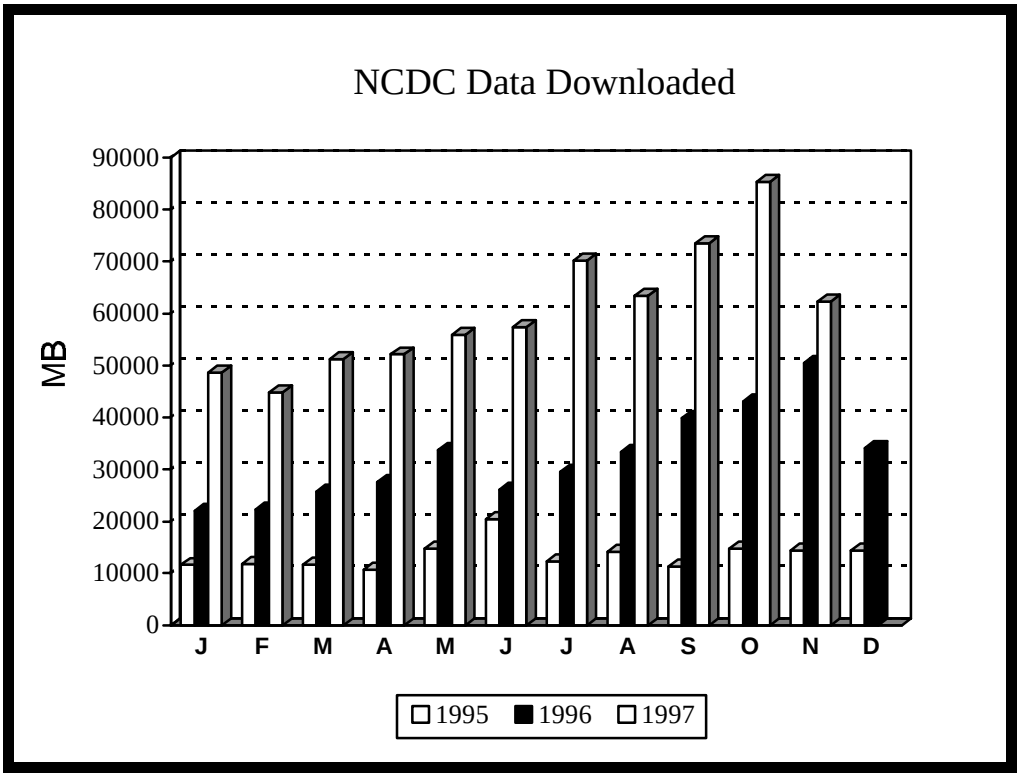
Radio Interview Concerning Nor'easters

A radio station in Angola, DE, which broadcasts over much of the states of Maryland and Delaware, interviewed Neal Lott of the National Climatic Data Center's Research Customer Service Group. The interview focused on the phenomenon of nor'easters and details about their climatology.

✦ Interesting Requests

Search for Answers Continues

A Naval Commander working in conjunction with the Congressional Aviation subcommittee



investigating the crash of TWA Flight 800, contacted the National Climatic Data Center for additional meteorological data.

✦ Technology Applications

Help Desk

John Fauerbach and Cindy Karl, Systems Branch, have implemented a web-based COTS Information Technology (IT) Help Desk to: provide a means for desktop users to electronically report problems to the appropriate support personnel; provide a history of equipment or system failures; provide access by all personnel to solutions based on previous remedies; track and document the entire maintenance and response process; and allow the user and support staff to enter additional comments as necessary.

SCIENTIFIC AND PROFESSIONAL ACTIVITIES

✦ Working Groups/Committees/ Meetings

National Research Council (NRC) Climate Research Committee (CRC) Meeting

Thomas Karl, the National Climatic Data Center's Senior Scientist, chaired the CRC meeting in Washington. The meeting focused on observation and modeling. One action from the meeting included a letter that was sent to Dr. Gibbons, Director of the Office of Science and Technology Policy, and Tim Wirth, Under Secretary for Global Affairs at the Department of State, requesting an agenda item on climate observation at COP-3.

World Meteorological Organization Commission for Climatology

Kevin Gallo accepted an invitation from Dr. M. Coughlan, Director, World Climate Programmer Department of the World Meteorological Organization, to serve within the Commission for Climatology as a Rapporteur on Urban and Building Climatology, and as Rapporteur on Climate Services to the Urban Planning and Building Sector within the Working Group on Climate Information and Prediction Services (CLIPS).

Water Resources

Robert Quayle attended the multi-agency Symposium on Climate Variability, Climate Change, and Water Resource Management in Colorado Springs, CO, October 26-27, 1997. He presented a plenary paper on the state of scientific understanding of climate variability and change.

METOP Ground Segment Meeting

On November 20, National Environmental Satellite, Data, and Information Service (NESDIS) sponsored a meeting in Suitland, MD, with representatives from EUMETSAT to discuss Ground Segment preparations for the Meteorological Operational Satellite (METOP) environmental satellites, scheduled for operation beginning in 2003. There is a possibility that NESDIS will receive METOP data in "packets" instead of as orbital files, which will require significant changes to all ground systems including archive. NESDIS plans further discussions with EUMETSAT to review archive requirements and data exchange policies in more detail.

U.S. Climate Atlas

Dr. Chris Daly of Oregon Climate Service at Oregon State University visited the National Climatic Data Center November 19-21, 1997, to discuss and present work on the new U.S. Climate Atlas. Dr. Daly is the developer of the Parameter-elevation Regressions on Independent Slopes Model (PRISM) which is being used to grid data for the new U.S. Climatic Atlas.

National Research Council Meeting

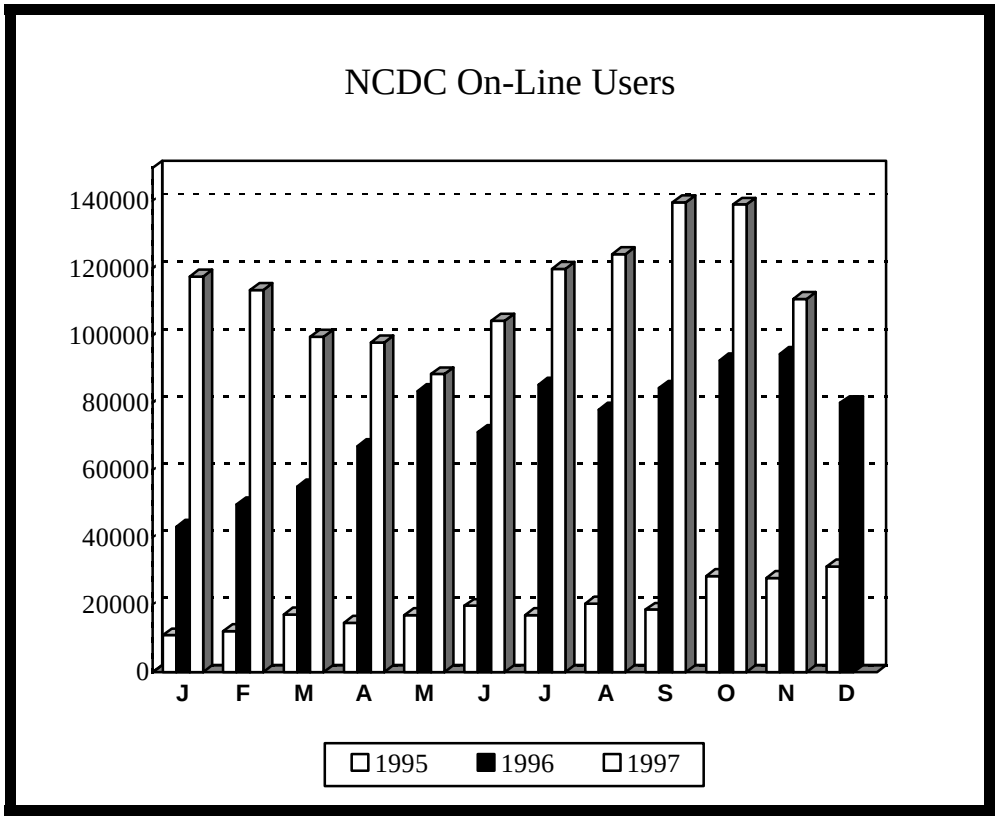
Dr. Bruce Baker participated in a meeting November 17-19, 1997, of a National Research Council Panel which reviewed the NASA Langley Distributed Active Archive Center (DAAC). The meeting was held at the Langley Research Center in Hampton, VA.

NCDC Personnel to Serve as Commission for Climatology (CCl) Repporteurs

Dr. Thomas Peterson and Michael Crowe have invitations from Dr. Michael Coughlan, the Director of the World Climate Programme Department of the World Meteorological Organization, to serve the CCl as rapporteurs. For the next four years, Dr. Peterson will be the Rapporteur on Statistical Methods, with emphasis on analyses of extreme events, while Mr. Crowe will serve as the Rapporteur on Global and Regional Climatological Data Sets and Station Networks. Mr. Crowe will also act as the CCl Working Group on Climate Data's liaison with the CCl Working Group on Climate Change Detection.

National Climate Extremes Committee

The National Climate Extremes Committee, chaired by Michael Changery of the National Climatic Data Center, including representatives from the National Weather Service (NWS), and the American Association of State Climatologists, met at NCDC November 19, 1997, and developed guidelines which will be followed in validating future national record extremes of various weather elements. The committee established a formal mechanism for verification of new meteorological records. It also developed guidelines for responding to media and other inquiries regarding the accuracy and acceptance of new extremes. The guidelines will be distributed by the NWS Office of Meteorology to all NWS field offices and other meteorological groups.



World Meteorological Organization (WMO) Document Prepared

The Report on the Final Version of the GCOS Surface Network (GSN) has been prepared by Harold Daan, Thomas Peterson, and Philip Jones and is being sent to World Meteorological Organization headquarters in Geneva, Switzerland, for publication. Much of the material was covered for AMS members in a BAMS article recently published.

NOAA Virtual Data System (NVDS) Activities

Steve Evans, National Climatic Data Center (NCDC) representative, attended meetings held in Suitland, MD, during November. Discussions centered around the various FY98 tasks and forming inter-Center project teams. All proposed teams have been assembled and most have met via video conference during the month. A two-hour time slot (Monday 1 - 3 p.m.) is available for team members to schedule the National Environmental Satellite, Data, and Information Services video conference equipment. NCDC managers were given a briefing on the goals of each project team and the Center personnel assigned to each team.

NNDC Server Project Startup

The NNDC Server project held its first video conference meeting last Monday. Representatives from each National Environmental Satellite, Data, and Information Services (NESDIS) data center, the Marada Corporation, Martha Morphy/SAO and Ernie Daddio/ESDIM attended this meeting. Dan Manns was designated as the project leader and primary contact for the Marada group. In the first phase of this project, the Marada group will review the NOAAServer system and all documentation provided by the NESDIS representatives by the end of December. The Marada team goal is to compare NOAAServer to the NVDS Architecture Plan and decide what aspects of NOAAServer can be used by the NOAA Virtual Data System (NVDS). Marada will produce a final report by mid-March 1998.

NCDC Hosts NEXRAD Users Workshop

The National Climatic Data Center (NCDC) hosted a Next Generation Weather Radar (NEXRAD) Users Workshop November 19-20. Participants from the Federal Aviation Administration (FAA), National Aeronautics and Space Administration, National Weather Service, Atlantic Oceanographic and Meterological Laboratory, and academia participated. Discussions took place on accessing data via the web, on open systems architecture, NEXRAD and the FAA weather architecture, uses of NEXRAD data in identifying and defining storm structures, and methods for storage and browsing NEXRAD data. Participants obtained a better understanding of how the data is ingested, archived and retrieved; and NCDC has a better understanding of NEXRAD user needs and requirements.

✦ Publications

Zhai, Panmao, and R. Eskridge, 1997: Atmospheric Water Vapor Over China. J. Climate. **10,** 2643-2652.

✦ Interactions with NOAA Line Offices

Working with the National Weather Service

The National Climatic Data Center (NCDC) has been negotiating with National Weather Service's (NWS) Office of System Operations concerning the new Rawinsonde Replacement System. NWS has been provided funding for FY98 to continue the design for the new upper air system. They asked NCDC to work with them in developing formats, data ingest procedures, data quality issues, and archiving systems. They have a critical design review scheduled for January 1998, with field testing scheduled for late 1998.

NEXRAD Data During Hurricane Danny

The National Climatic Data Center (NCDC) provided Next Generation Weather Radar (NEXRAD) Level II data for July 22-25, 1997, to the National Weather Service (NWS) Office in Wakefield, VA. The data were from the Norfolk/Richmond WSR-88D site, and covered the period of Hurricane Danny's passage through the area. NWS is studying the effectiveness of the radar in estimating rainfall amounts and wind speeds associated with the storm.

NOAA Spaceflight Meteorology Group Uses NEXRAD Level II Data in Study

Researchers with the National Oceanic and Atmospheric Administration Spaceflight Meteorology Group obtained Next Generation Weather Radar (NEXRAD) Level II data from the National Climatic Data Center. The research group is using data from the Melbourne, FL, radar site for five selected space shuttle launch dates during the 1995-1997 period. They are using NEXRAD radar data as part of their forecast analysis support of the space shuttle program.

North American Observation System (NAOS) Briefing

Thomas Karl, the National Climatic Data Center's Senior Scientist, presented an invited lecture entitled "Guidelines and Principles for Climate Monitoring" at the NAOS Council meeting. This lecture was used as the basis for beginning an evaluation of the effect on climate analyses and services of making changes in the U.S. upper air network.

NOAA Decadal to Centennial Annual 4th Quarter Review

Thomas Karl, the National Climatic Data Center's Senior Scientist, briefed Dr. Baker and other National Oceanic and Atmospheric Administration (NOAA) personnel on the progress/status of the NOAA DEC-CEN program.

EMPLOYEE ACTIVITIES

✦ EEO and Community Outreach

Career/Occupational Fair

Tom Ross participated in the Reynolds Middle School Career/Occupational Fair during November 1997. Approximately 30 different careers/occupations were represented.

El Niño

John Jensen spoke on El Niño to a third grade class at the Haw Creek Elementary School, and a seventh grade science class at the A.C. Reynolds Middle School.